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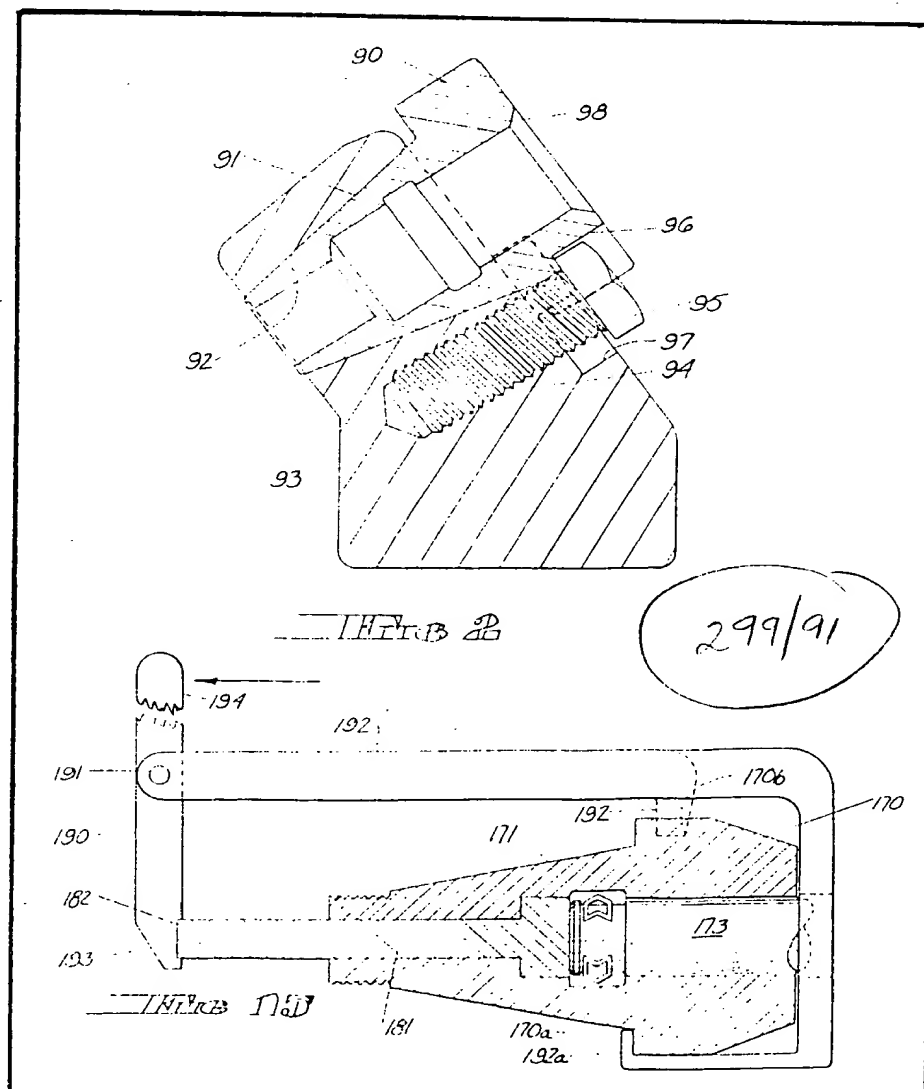
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(54) **Puk-holder assemblies**

(57) A knock-out arrangement for ejecting a bit 173 from a bit holder 170 of mining, road working and earth-moving machinery in which the holder 170 has a shank receiving perforation the arrangement comprising a bore extending in the bit holder to the shank receiving perforation, a plunger-like element 181 in the bore extending toward the shank receiving perforation and adapted to be moved thereinto to engage and eject the bit shank, and eject means 190, 192 for actuating the plunger-like element 181. Also

disclosed are wedge arrangements and related means for mounting means, base members, bit holders, and combinations thereof, for said machinery. A base member for use in a mounting means, base member combination wherein the mounting means 90 has a wedge fit within the base member 93, the base member having tapered walls 91 defining a tapered cavity adapted to receive a correspondingly tapered mounting means, means for augmenting the wedge fit 94, 95 and additional means 96 for preventing rotation of the mounting means within the cavity.



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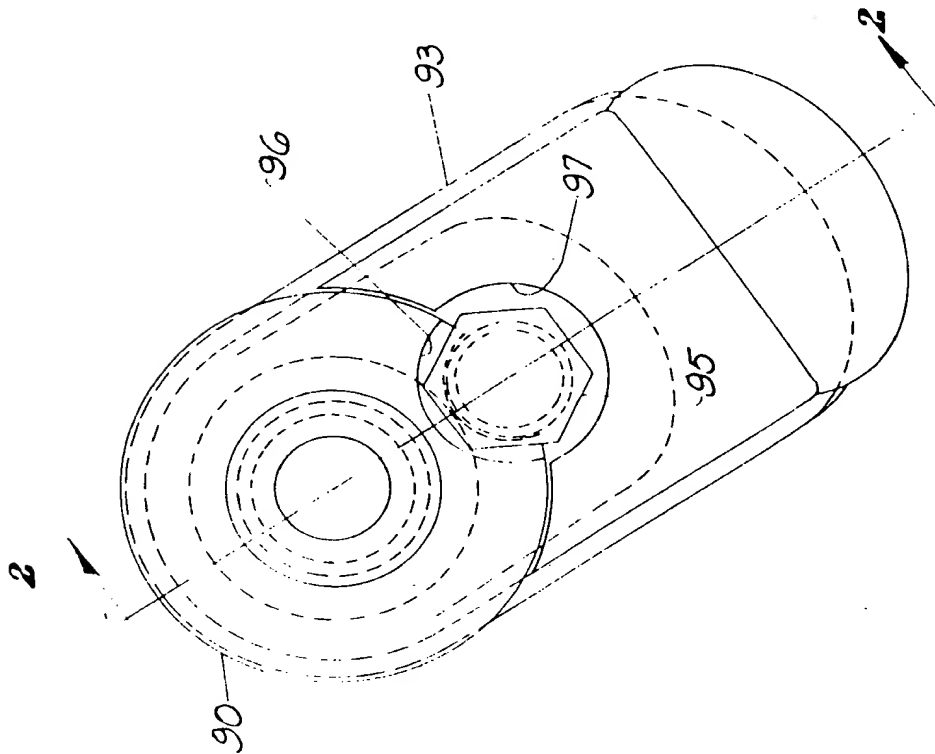


FIG. 1

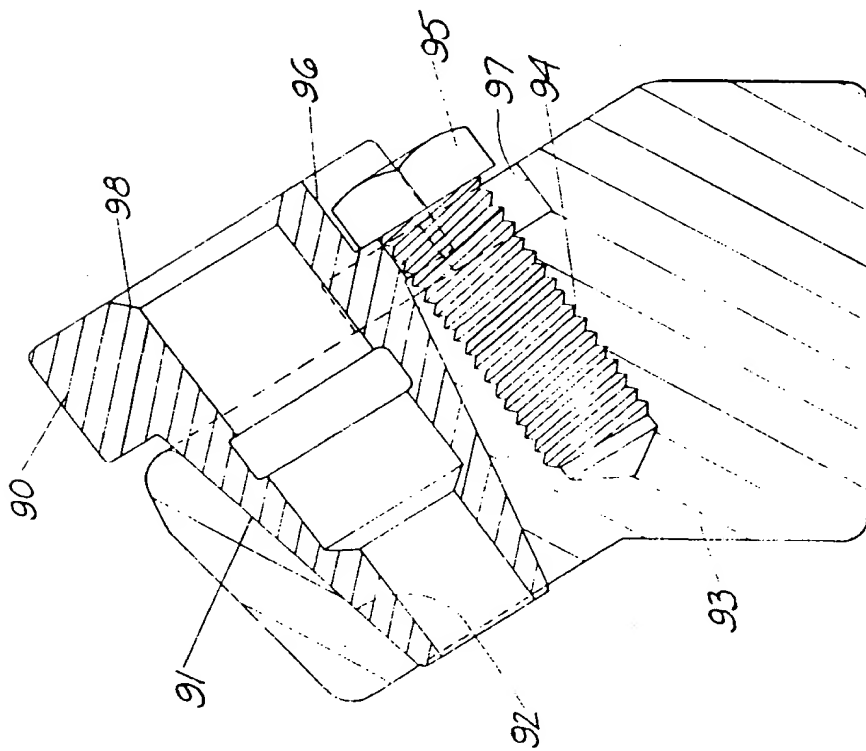
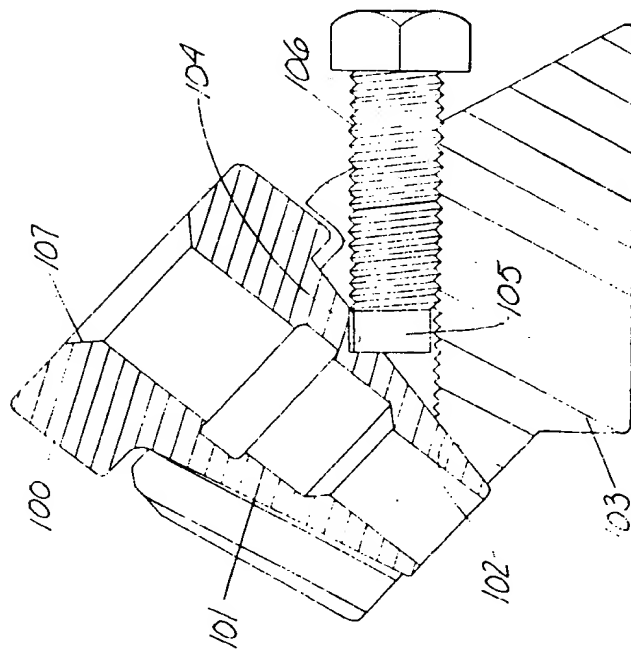
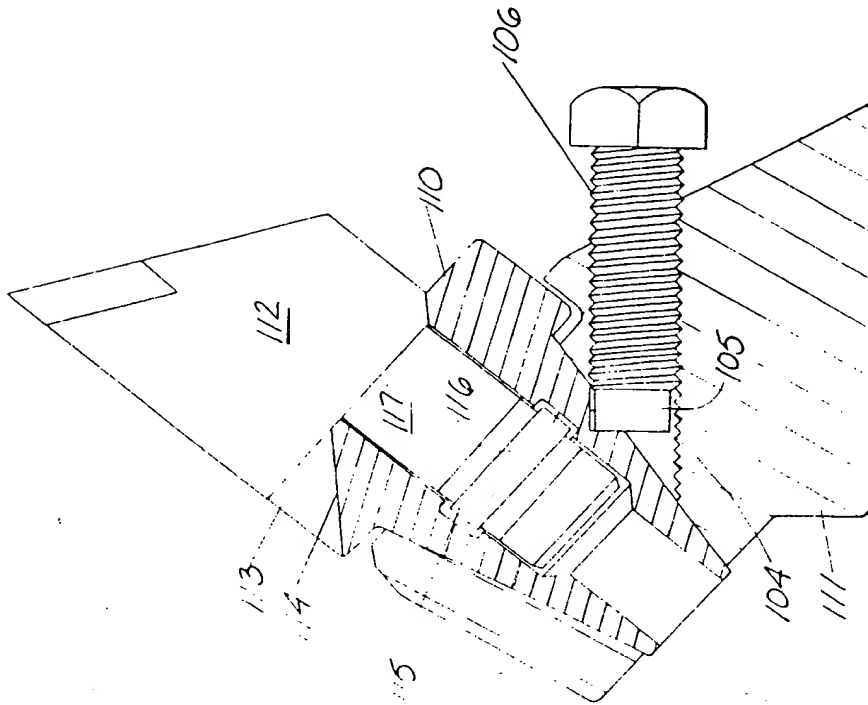
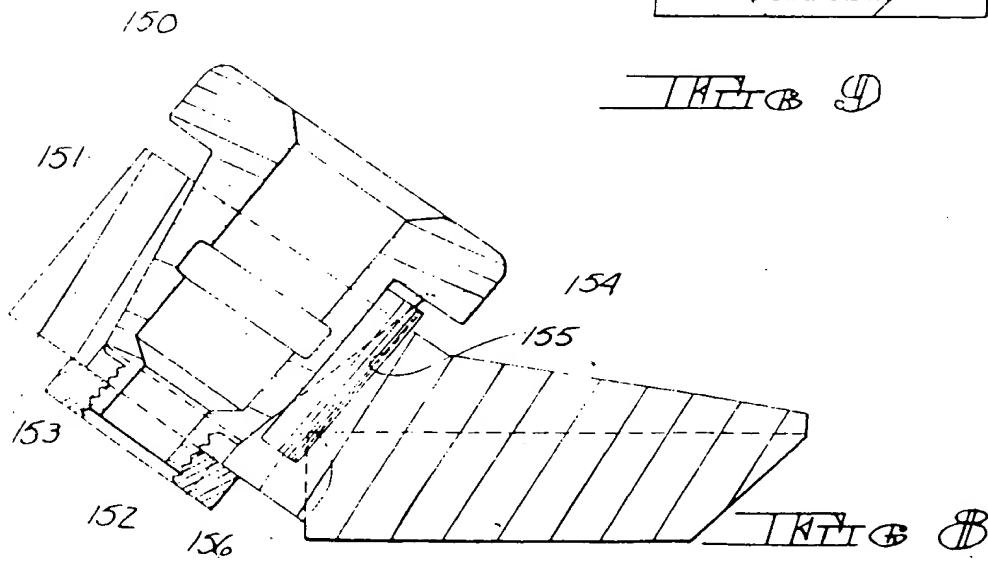
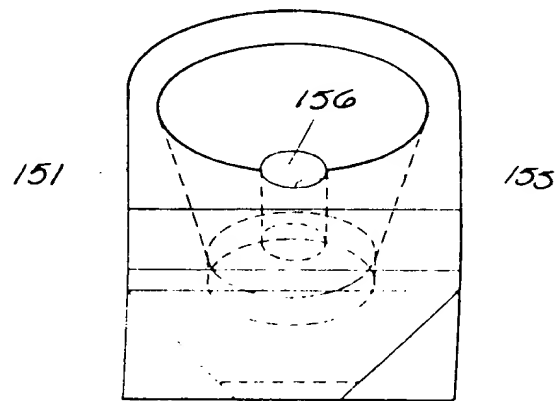
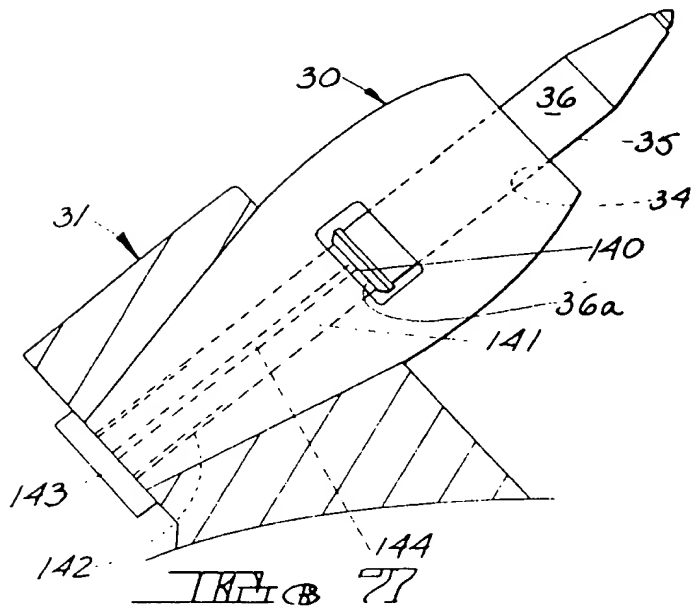
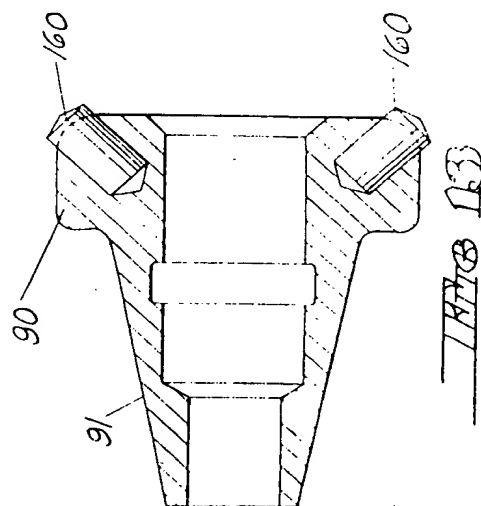
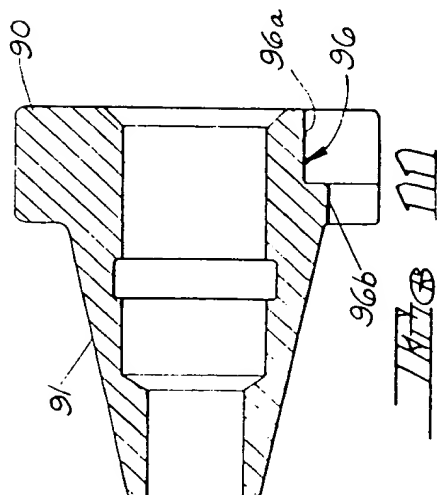
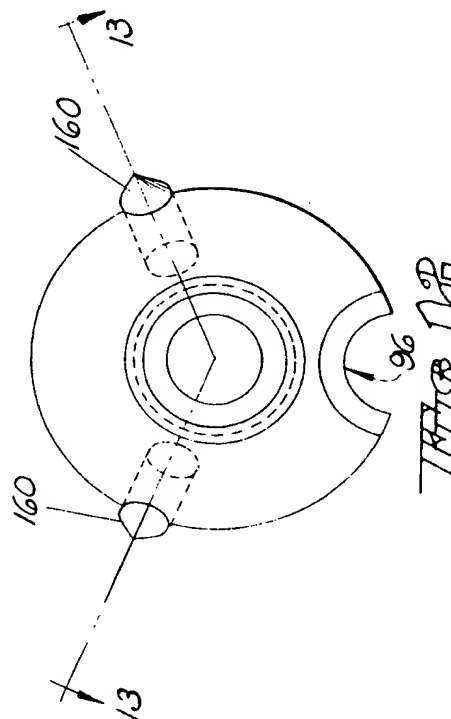
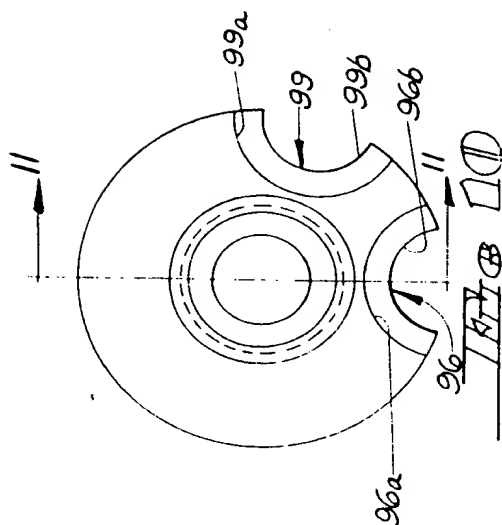


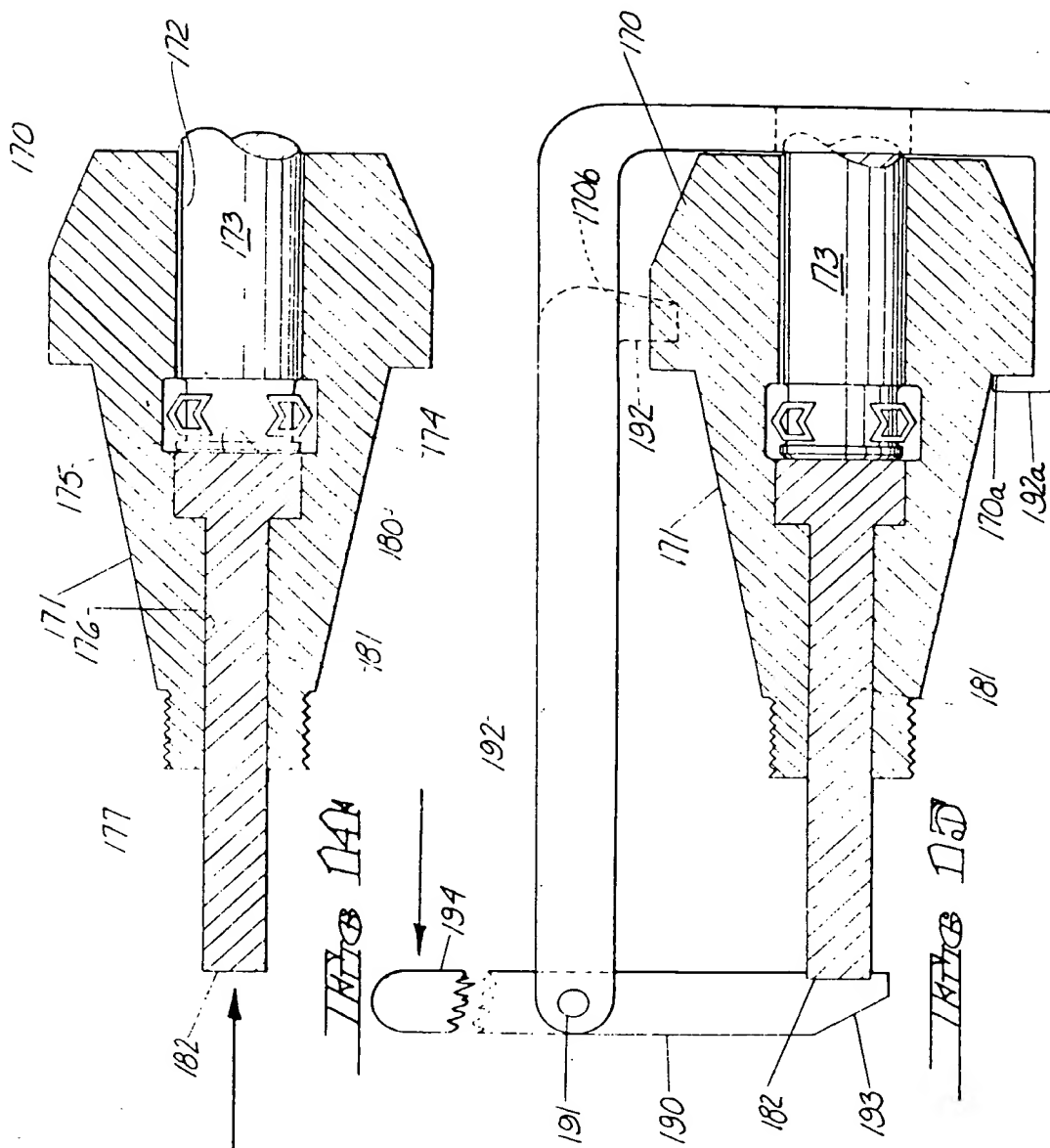
FIG. 2

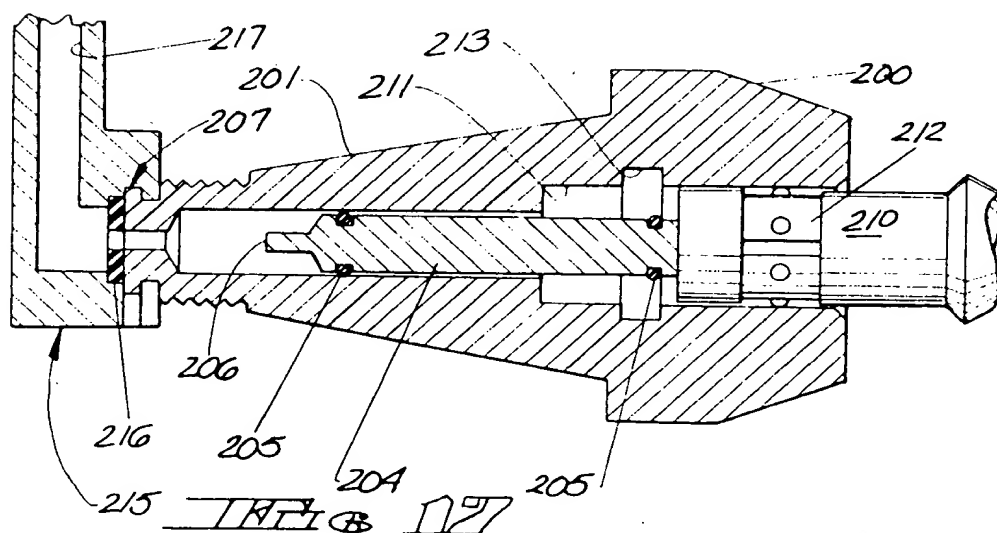
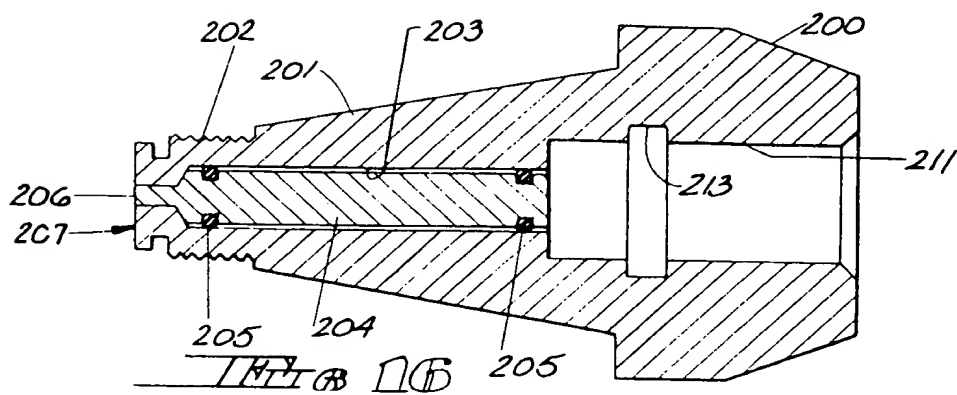


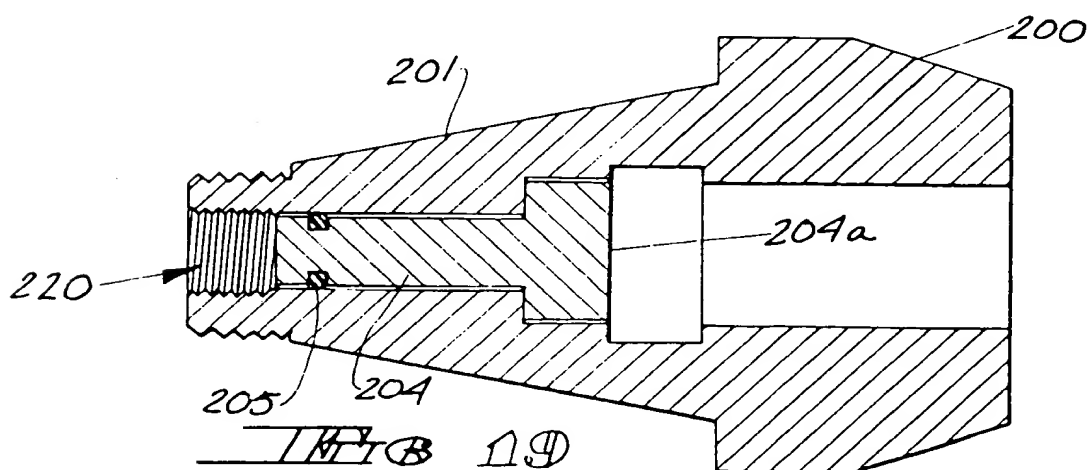
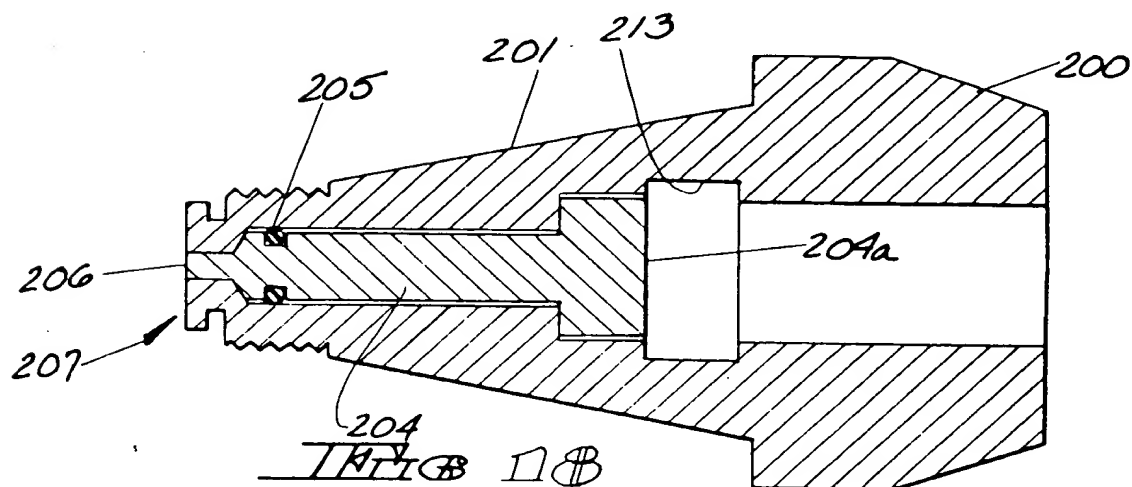












SPECIFICATION

Wedge arrangements and related means for mounting means, base members, and bits, and combinations thereof, road working, or earth moving machinery

The present invention relates to wedge arrangements and related means for mounting means, base members, bit holders, and combinations thereof, for mining, road working, or earth moving machinery, and is a modification of the invention disclosed in our British application Serial No. 8016602.

The invention has particular use in the mining, road planing and earth digging fields. More specifically, the invention relates to arrangements by which a tool mounting means, such as a mining machine bit holder having a socket therein to receive a bit, is located in a base member, such as used in mining machines, without any relative movement between the mounting means and base member, whereby to prevent wear of both the mounting means and base member. These arrangements are readily adapted for use in the operation of mining, road planing or earth moving equipment.

The present invention is especially applicable to mining machines and the like of the type having a primary drive member to which is affixed one or more base members each adapted to receive a bit holder which in turn receives a bit or cutting tool. The drive member, which in turn is driven by appropriate mechanisms, may take a number of forms such as a chain, a rotating wheel, a rotating drum or a rotating arm. The bits or cutting tools, which may also take various forms such as mining machine cutter bits, road ripping elements, digger teeth and the like. All of the bits, cutting tools and the like contemplated for use in the arrangements of the present invention are characterized by having a body portion or shank provided with a cutting tip at least at one end. All of the various mounting means contemplated for use with this invention are provided with sockets or shank receiving perforations adapted to receive the body portion or shank of the bit, cutting tool and the like. Means are provided to retain the shank of the bit, cutting tool and the like in its respective mounting means during the mining, road working or earth digging operation. Means are also provided to maintain the mounting means on its respective base member which in turn is either affixed to, or made an integral part of, the drive member earlier mentioned.

Prior art workers have used many means to secure cutting tool shanks in shank receiving perforation provided in various mounting means. Set screws and other mechanical latching or locking devices have been used. A number of other arrangements, including various resilient retaining means and the like, which enabled, for example, the provision of a "knock-in", "pry-out" engagement between the cutting tool shank and the shank receiving perforation of the mounting

means, have also been developed. Such a resilient retaining means is taught in United States Letters Patent 3,114,537. United States Patent No. 2,965,365 also discloses quite satisfactory arrangements for accomplishing this.

Furthermore, means for retaining a rotatable bit within a lug of a mining machine in such manner that the bit may be readily replaced are shown in United States Patent No. 3,397,012. In United States Patent No. 3,662,206 still other means are shown for enabling quick and easy removal of a non-rotatable cutting tool from its mounting means.

Prior art workers also recognized the importance of providing arrangements by means of which the mounting means itself could be easily and readily removed from the respective base member on which it was mounted. A number of "pin-on", "wedge-on" and other arrangements were developed for accomplishing that result. The present invention has particular application to those arrangements generally classified as "wedge-on". There are known United States Patents which disclose various means of a "wedge-on" type for quickly and easily removing and replacing worn mounting means. Figure 13 of United States Patent No. 3,342,531 shows such a means in connection with a particular type of cutting tool or bit. Figure 14 of United States Patent 3,834,764 shows another type of wedging means. Other wedge arrangements are also disclosed in United States Patent No. 4,057,294.

According to the invention there is provided a knock-out arrangement for ejecting a bit from a bit holder of the type having a shank receiving perforation therein, the bit having a shank received in the perforation, said knock-out arrangement comprising: a bore extending in said bit holder to said shank receiving perforation, a plunger-like element in said bore extending toward said shank receiving perforation and adapted to be moved into said perforation to engage and eject said shank, and eject means for actuating said plunger-like element.

A base member for use in a mounting means, base member combination, in accordance with the invention, wherein the mounting means has a wedge fit within the base member, comprising: a block of material having tapered walls which define a tapered cavity therein, said tapered cavity being adapted to receive a portion at least of a correspondingly tapered mounting means therein, said block of material being arranged to completely surround that portion of said tapered mounting means which has said wedge fit therein, said block of material having means associated therewith for augmenting said wedge fit and for preventing rotation of said mounting means portion within said cavity.

The invention further provides a mounting means for use in a mounting means, base member combination wherein the mounting means has a wedge fit within said base member, the mounting means comprising: a first portion adapted to be received within a tapered cavity

provided in said base member, said second portion being tapered so as to have a wedge fit within said tapered cavity, a portion at least of said second portion being adapted to be
 5 completely surrounded by said base member when so seated in said cavity; means on said mounting means for engagement by a retaining means which augments said wedge fit; and
 10 means to prevent relative movement between said second portion and said tapered cavity.

According to the invention there is further provided a combination of a mounting means and a base member, the combination being for use in
 15 mining, road planing or earth moving equipment in which said combination is itself fixed against rotation about its axis, the mounting means having a shank receiving perforation to receive the shank of a cutting element therein, the
 20 improvement which comprises: a tapered portion on said mounting means, said base member having a correspondingly tapered cavity, said base member completely surrounding that part of said tapered portion which is seated in said
 25 tapered cavity, and said tapered portion being seated within said tapered cavity with a self-releasing wedge fit which is 360° in scope whereby to impede relative movement between said mounting means and said base member; and
 30 retaining means to retain said tapered portion in its seated position within said tapered cavity and to augment said wedge fit.

Reference is made to the accompanying drawings wherein:

35 Figure 1 is a front elevational view of a base member and mounting means arrangement of this invention wherein additional means are utilized to secure the mounting means within the base member and to prevent rotation of the
 40 mounting means within the base member.

Figure 2 is a section taken along the line 2—2 of Figure 1.

Figure 3 is a sectioned side elevational view of a modification of the base member and mounting
 45 means arrangement of Figure 2.

Figure 4 is a sectioned side elevational view of the base member and mounting means arrangement of Figure 3 but showing the base member as modified to receive a different type of
 50 bit.

Figures 5 and 6 are sectioned side elevational views of the base member and mounting means arrangement of Figures 3 and 4 wherein the
 55 mounting means is shown as modified to receive still different styles of bit.

Figure 7 is a fragmentary side elevational view, partly in cross section, illustrating the base member, mounting means, cutting element combination of this invention but with modified
 60 means for retaining the mounting means within the base member cavity and providing an anvil portion within the mounting means to be abutted by a rotatable bit of the type depicted.

Figure 8 is a fragmentary side elevational view,
 65 sectioned, depicting another manner in which the

mounting means may be prevented from rotating within the base member.

Figure 9 is an elevation of the base member of Figure 8 as seen from the right side of Figure 8.

70 Figure 10 is a top view of a mounting means generally like that depicted in Figures 1 and 2 but modified so as to provide two different locating positions for the mounting means within the base member.

75 Figure 11 is a sectioned side view taken along the line 11—11 of Figure 10; this view is also representative of the mounting means depicted in Figure 2.

Figure 12 is a top view of a mounting means such as that depicted in Figure 2 but showing
 80 inclusion of wear resistant inserts or core breakers.

Figure 13 is a view taken along the line 13—13 of Figure 12.

85 Figure 14 is a sectioned view of a mounting means adapted to be received within various of the base members depicted and modified so as to include a plunger element for expelling broken bits.

90 Figure 15 is a sectioned view of a mounting means like that shown in Figure 14 with a somewhat different arrangement for actuating the bit expelling means.

Figure 16 is a sectioned side view of a
 95 mounting means provided with a fluid actuated plunger for expelling a broken bit.

Figure 17 is a view similar to that of Figure 16 and including a depiction of the broken bit being expelled and the coupling for applying fluid
 100 pressure to the plunger there depicted.

Figure 18 is a sectioned side view similar to those of Figures 16 and 17 illustrating a mounting means adapted to receive one type of rotatable
 105 bit and including a modified bit expelling plunger which incorporates an anvil against which the rotating bit normally abuts.

Figure 19 is a sectioned side view generally similar to that of Figure 18 but illustrating a threaded fitting for applying fluid pressure to
 110 actuate the bit expelling plunger.

The wedge arrangement of Figures 1 and 2 has some similarities to those, for example, of Figures 15 and 18 of our British Application Serial No. 80/16602. A mounting means 90 having a tapered portion 91 is located in a tapered cavity 92 provided in a base member 93. In order to insure that the mounting means 90 will be nonrotatably secured within the base member 93, a bolt 94 having a head 95 is threadably engaged with the body of the base member 93, the head 95 being engaged within a notch 96 provided in the mounting means 90. In this particular arrangement the base member 93 is also provided with a notch 97 capable of accommodating the head 95 if necessary. The bolt head 95 will bear against that part of the mounting means 90 disposed at the bottom of the notch 96 and will urge the mounting means tapered portion 91 into continuous engagement within the tapered cavity 92 while at the same
 120
 125
 130

time preventing rotation of the mounting means 90 within the base member 93.

The particular mounting means 90 illustrated in Figures 1 and 2 is intended to receive a plumb-bit. Such a bit will have a seated, abutting engagement within the beveled portion 98 of the mounting means 90. It is not a requirement of this invention, however, that any particular bit be utilized with any particular mounting means. Such a mounting means, for example, could be arranged to accommodate a bit such as shown at 36 in Figures 14 and 18 of our above-mentioned British application. It would also be possible, however, to modify the mounting means so that it could accommodate the type of bit illustrated in Figure 19 or in Figure 3 of said British application. Similarly it will be understood by those skilled in the art that the basic mounting means-base member arrangements of many of these figures may be modified so as to accommodate any desired type of bit while maintaining the substantially 360° wedge relationship between the base member tapered cavity and that part of the mounting means taper which is received therein. This will become even more apparent from the description to follow.

In Figure 3 the mounting means 100 is illustrated as having a taper portion 101 which is received within the tapered cavity 102 of the base member 103. The side wall of the mounting means 100 is provided with a notch 104 which is engaged by the smooth end 105 of a threaded bolt 106. Engagement of the bolt portion 105 within the notch 104 will urge the mounting means into a full seated position within the base member while at the same time preventing rotation of such mounting means within such base member. Again, while the mounting means 100 has been illustrated as being of the type to receive a plumb-bob bit as evidenced by the beveled portion 107, it will be evident to those skilled in the art that the arrangement 104—106 could be applied to others of the mounting means base member combinations.

Thus, in Figure 4 the holding arrangement 104—106 is applied to a mounting means 110 and base member 111 wherein the mounting means is designed to accommodate a non-rotatable bit 112. The bit 112 is illustrated as having a tang 113 received within a notch 114 provided in the mounting means 110. A resilient retainer 115 engages within a groove 116 in the shank 117 of the bit 112 in order to hold that bit within the mounting means 110.

Figures 5 and 6 show other mounting means-base member wedged combinations employing the holding means 104—106, the principal difference being simply in the style of bit the respective mounting means is designed to accommodate. The mounting means 120 of Figure 5 is provided with an internal abutment 121 to be engaged by the abutment surface 122 provided at an end of a non-rotatable bit 123. The abutting surfaces 121 and 122 insure that the bit 123 will not rotate within the shank receiving

perforation 124 of the mounting means 120. A captive keeper 125 may be utilized to prevent the bit 123 from being dislodged from the mounting means 120. As with the other similar

arrangements, the notch 104 in the mounting means 120 allows the setscrew 105—106 to hold the mounting means 120 in place within the base member 111 and prevents rotation of the mounting means 120 within that base member.

In the arrangement of Figure 6 the mounting means is like that of Figure 4 and like references have again been employed to designate like parts. Thus the mounting means 110 is again secured within the base member 111 by the 360° wedging action which is enhanced by engagement of the bolt or setscrew 105—106 within the notch 104. The bit 130 is provided with a tang 131 which engages within a slot 114 provided in the mounting means 110. By virtue of the slot 114 accommodating the mating tang 131 on the bit 130, rotation of such bit within the shank receiving perforation 132 of the mounting means 110 is prevented.

It should again be emphasized as should now be evident from the description given and from reference to all of the drawing figures that the 360° wedged arrangement for a mounting means within a base member is not dependent on the style of bit employed within the mounting means nor is it dependent on either rotatable or non-rotatable bits. It is true, however, that rotating bits reduce the tendency of the mounting means to rotate within the base member and, therefore, less stringent means may be utilized to keep the mounting means from rotating in the base member. By the same token it may be that when non-rotating bits are employed, more stringent means will be required to keep the mounting means from rotating within the base member. It should be apparent to those skilled in the art that the various means illustrated throughout this disclosure may be utilized to achieve these results.

The arrangement of Figure 7 is a variation of the arrangements illustrated, for example, in Figures 1 and 14 of our above-mentioned British application. The bit holder or moulded means 30 is provided with a shank receiving perforation 34 to accommodate the shank 35 of a rotatable bit 36 having a rear abutment surface 36a. In the arrangement of this Figure 7, however, the anvil 42 of Figure 1 is replaced by the end 140 of a bolt-like member 141 having a threaded portion 142 and a head 143. Thus the anvil 140 is a part of the means which retains the mounting means 30 in wedged 360° engagement within the base member 31. If desired the bolt-like member 141 could be provided with a bleed hole 144 that could also be utilized as knock-out hole for the removal of broken bits.

Figures 8 and 9 illustrate another manner in which a bit holder 150 may be prevented from rotating within a base member 151. The threaded end 152 of the bit holder 150 is engaged by a nut 153 which will urge the bit holder 150 to a

seated position within the base member 151 in the manner, for example, of the arrangement of Figure 20 of our above-mentioned British application. Although this arrangement will usually be sufficient to prevent rotation of the bit holder 150 within the base member 151, more positive means for that purpose are also utilized. In this particular arrangement such more positive means comprises a pair of mating grooves 154 in the bit holder 150 and 155 in the base member 151, a pin 156 being located in these mating grooves 154, 155 to prevent rotation.

The bit holder of Figures 10 and 11 is essentially like that of Figures 1 and 2 and, therefore, like numerals have been used to designate like parts. The essential difference between the bit holder of Figure 10 and that of Figure 1 is the provision of an extra notch 99; this extra notch 99 or second locating cutout permits the bit holder or mounting means 90 to be rotated if cored. These notches or located cutouts 96 and 99 have enlarged portions 96a and 99a to accommodate the head of a retaining bolt or set-screw and a smaller portion 96b or 99b to accommodate the stem thereof, see also Figure 2.

Coring, wear on the periphery of the bit holder or mounting means, may eventually occur during, for example, a mining operation. The arrangement of Figures 10 and 11 permits a longer life for the bit holder illustrated by permitting it to be rotated as to present a different area to the abrasive working conditions encountered.

Another manner of prolonging the life of such a bit holder is illustrated in Figures 12 and 13 wherein hardened insert elements 160 have been located at strategic places about the periphery of the bit holder. Similar arrangements are broadly shown in U.S. Patent No. 3,834,764—Krekeler.

It has been pointed out earlier that sometimes the various bits utilized in the wedged bit holder-base member combinations will break. It is sometimes difficult to, in the field, remove these bits readily from these wedged combinations, particularly those of the instant invention wherein the wedging action is obtained through substantially the full 360° engagement of the tapered bit holder portion within the corresponding tapered cavity of the base member. Sometimes it is possible to insert a drift or the like into the bit receiving cavity and thus force the broken bit therefrom; this could be accomplished, for example, in the arrangement of Figure 7 wherein such a drift could be inserted through the knock-out hole or orifice 144. Other means are illustrated in the figures to be described. In this connection it should again be noted that while these means are illustrated as applied to certain kinds of bits, this is for purposes of illustration only, and it will be obvious to those skilled in the art that such means may be utilized to remove almost any kind of broken bit from the bit holder with which it is associated.

In Figure 14 a representative bit holder 170 having a 360° tapered portion 171 is depicted. The bit holder is provided with a shank receiving

perforation 172 to receive the shank 173 of what is illustrated as a rotatable bit. A captive keeper such as that shown in U.S. Patent No. 3,767,266 is depicted at 174; this keeper is eventually received within a groove 175 provided at the end of the shank receiving perforation 172. The end of the bit shank 173 abuts an anvil 180. In this particular arrangement the anvil 180 is located on a movable plunger 181 which is received in a suitable perforation 176 in the bit holder 170; the plunger 181 has an end 182 which normally extends well beyond the threaded end 177 of the bit holder 170. If the bit or bit shank 173 should break, it may be removed by simply applying blows to the end 182 of the plunger 181. (If the bit were simply worn, not broken, it could be removed, for example, with a tool such as described in U.S. patent No. 3,769,683).

Many of the features illustrated in Figure 15 are like those depicted in Figure 14 and, therefore, like numerals have been used to designate like parts. It is recognized that in some instances it may be impractical to strike the end 182 of the plunger 181 with a hammer or the like. The arrangement of Figure 15, therefore, illustrates a removable tool as applied to a bit holder generally like that illustrated in Figure 14. The removable bit removing tool of Figure 15 comprises a lever 190 pivoted at 191 to an arm 192 which may engage any convenient purchase point on the bit holder. An end 193 of the lever 190 is adapted to engage the plunger end 182. The other end 194 of the lever is that against which pressure will be applied, as indicated by the arrow in that figure, in order to move the plunger 181 so as to eject the broken bit represented by the bit shank 173. The full line extension 192a of Figure 15 engages beneath a shoulder 170a to establish a suitable purchase point for the member 192. An alternative arrangement is shown in dotted lines at 192b wherein a notch 170b is provided in the bit holder 170 to establish the required purchase point for the member 192. Any convenient purchase point may be utilized; it could even be located on a remote component.

A somewhat different knock-out means is depicted in Figures 16 and 17. Again, while the bit fragment illustrated is that of a plumb-bob bit, the invention may be applied to bit holder-base member wedged combinations in which a variety of bits are used. The bit holder or mounting means 200 of these figures is provided with a 360° tapered portion 201 to be received within a corresponding cavity of a base member. The bit holder 200 may be secured within such base member by any number of means; in Figures 16 and 17 such means are comprised of a nut which will engage the threaded end 202 of the bit holder 200. This bit holder is provided with an axial bore 203 to slidably receive a piston 204 therein. The piston is properly sealed as indicated at 205. The piston 204 terminates in a button 206 received within an adapter section 207 provided at the end of the bit holder 200. In its at-rest position the plunger 204 will be located as

shown in Figure 16. A bit having a shank portion 210 will be located in the bit holder 200 and shank receiving portion 211 thereof. A captive keeper 212 located on the bit shank 210 will be received within the groove 213. This captive keeper may be of any resilient style such as to permit it to be collapsed while passing through the shank perforation 211 and being such as to thereafter expand into the groove 213 in order to retain the bit shank within the bit holder.

If the bit should break and it is required to remove the remaining bit fragment from the bit holder 200, a mating fitting 215 is applied to the member 207 provided at the end of the bit holder 200 and a high pressure fluid is introduced so as to act against the piston button 206 and piston 204 to force the piston against the bit fragment so as to overcome the captive keeper 212 and eject the bit fragment from the bit holder, or at least project it far enough therefrom that it may be engaged by other means and removed from the bit holder. Additional sealing means 216 may be provided in the mating fitting section 215. A high pressure, expandable fluid may then be applied via the channel 217. In some instances it may be desirable to recover the fluid and this might be achieved by applying a suction arrangement (not shown) to the fitting 215.

The arrangement of Figure 18 is much like that illustrated in Figure 17 and like reference numerals have been employed to designate like parts. In this particular arrangement it is contemplated that a cylindrical rotatable bit of the type shown in, for example, Figure 1 of our above-mentioned British application, will be employed and the piston 204 is provided with an anvil 204a against which the end of the bit will abut, the appropriate captive keeper on the bit shank being received in the groove 213. This plunger 204, 204a could, however, expel other kinds of bits so long as it may be so actuated as to pass into the perforation in which the bit shank is located.

The arrangement of Figure 19 is much like that of Figures 17 and 18 differing in that the special fitting 207 has been replaced by a threaded fitting 220 for the application of fluid pressure. The fitting or member 220 could also be adapted to receive a screw means to engage and eject the broken bit.

The fittings generally indicated at 207, 215 and 220 in, for example, Figures 16, 17 and 19, may be of various types. They could, for example, be like those used with the grease fittings and grease guns which are known in the art. In some instances it may be necessary to use non-flammable fluids such as silicone jelly or water. In any event it will be understood by those skilled in the art that appropriate power sources, connectors and fluids are available.

The various means illustrated provide good ways in which remaining broken bit shank fragments may be quickly removed in the field, not only from the 360° wedged combination of mounting means and base member, but also from other bit holders, without having to tear the

machinery completely apart. Such means have been illustrated as comprising an extension to be struck a blow, a lever arrangement and other means for applying pressure. The type of bit utilized in the bit holder does not constitute a limitation on any aspect of this invention. Various mounting means may be used in the wedged combination of mounting means and base member, and these mounting means may be arranged to accommodate a variety of bits. That facet of the invention which contemplates quick removal of such bits from the wedged combination resides in various means which may be applied to any of the wedged combinations and the particular bits therein employed.

Claims

1. A knock-out arrangement for ejecting a bit from a bit holder of the type having a shank receiving perforation therein, the bit having a shank received in the perforation, said knock-out arrangement comprising: a bore extending in said bit holder to said shank receiving perforation, a plunger-like element in said bore extending toward said shank receiving perforation and adapted to be moved into said perforation to engage and eject said shank, and eject means for actuating said plunger-like element.

2. The knock-out arrangement according to claim 1 for ejecting a bit from a wedged-together bit holder-base member combination, including a retaining means to retain said bit holder within said base member and to augment the wedge fit, wherein said bore extends through said combination to said shank receiving perforation.

3. The knock-out arrangement of claim 2 in which said eject means comprises an extension on said plunger-like element remote from said perforation and normally protruding from said wedged-together bit holder-base member combination.

4. The knock-out arrangement of claim 3 including lever means engaging said extension.

5. The knock-out arrangement of claim 2 in which said eject means includes a fitting so located on said wedged-together bit holder-base member combination as to permit said combination to be coupled to a source of fluid power for actuating said plunger-like element within said bore.

6. The knock-out arrangement of claim 2 in which one end of said plunger-like element normally extends within said perforation so as to serve as an anvil for the shank of a bit.

7. The knock-out arrangement of claim 1 in which said eject means comprises screw means operable within said bore to engage said plunger-like element.

8. The knock-out arrangement according to claim 1 wherein said plunger-like element is located wholly within said bore, and wherein said eject means is connected to said bit holder.

9. The knock-out arrangement of claim 8 wherein said eject means includes a fitting so located on said bit holder as to permit said bit

holder to be coupled to a source of fluid power for actuating said plunger-like element within said bore.

10. The knock-out arrangement of claim 8 wherein one end of said plunger-like element normally extends within said perforation so as to serve as an anvil for the shank of a bit.

11. The knock-out arrangement of claim 8 wherein said eject means comprises screw means operable within said bore to engage said plunger-like element.

12. The knock-out arrangement of claim 1 wherein said eject means comprises an extension on said plunger-like element remote from said perforation and normally protruding from said bit holder through said base member so as to be accessible from outside said base member.

13. The knock-out arrangement of claim 12 in which one end of said plunger-like element normally extends within said perforation so as to serve as an anvil for the shank of a bit.

14. The knock-out arrangement of claim 12 wherein said eject means comprises screw means operable within said bore to engage said plunger-like element.

15. The knock-out arrangement of claim 12 including lever means engaging said extension.

16. A base member for use in a mounting means, base member combination wherein the mounting means has a wedge fit within said base member, said base member comprising: a block of material having tapered walls which define a tapered cavity therein, said tapered cavity being adapted to receive a portion at least of a correspondingly tapered mounting means therein, said block of material being arranged to completely surround that portion of said tapered mounting means which has said wedge fit therein, said block of material having means associated therewith for augmenting said wedge fit and for preventing rotation of said mounting means portion within said cavity.

17. The base member of claim 16 in which said last mentioned means comprises a screw so located in said base member as to enable a head thereon to engage within a notch provided in said mounting means when seated within said base member.

18. The base member of claim 16 in which said last mentioned means comprises a set screw so located in said base member as to enable an end thereof to engage within a notch provided in said mounting means tapered portion when said tapered portion is seated within said base member.

19. The base member of claim 16 in which said last mentioned means comprises a pin located in a perforation so arranged as to mate with a corresponding perforation provided in a said mounting means when seated in said tapered cavity.

20. The base member of claim 16 in which said last mentioned means comprises having a cross section through said tapered walls which is other than circular.

21. A mounting means for use in a mounting means, base member combination wherein the mounting means has a wedge fit within said base member, said mounting means comprising: a first portion provided with a shank receiving perforation adapted to receive the shank of a cutting element therein; a second portion adapted to be received within a tapered cavity provided in said base member, said second portion being tapered so as to have a wedge fit within said tapered cavity, a portion at least of said second portion being adapted to be completely surrounded by said base member when so seated in said cavity; means on said mounting means for engagement by a retaining means which augments said wedge fit; and additional means associated with said mounting means to prevent relative movement between said second portion and said tapered cavity.

22. The mounting means of claim 21 in which said additional means comprises a notch therein to receive the head of a set screw located in the base member when said mounting means is seated in the tapered base member cavity.

23. The mounting means of claim 22 including a second of said notches.

24. The mounting means of claim 21 in which said additional means comprises a notch located in said second portion so as to receive the end of a set screw located in a base member when said second portion is seated within the tapered base member cavity.

25. The mounting means of claim 21 in which said additional means comprises a member engaged within said second portion, said member being provided with a head to engage a base member when said second portion is seated within the tapered base member cavity.

26. The mounting means of claim 25 in which an end of said member comprises an anvil located within said shank receiving perforation.

27. The mounting means of claim 26 in which said member is provided with a bleed and knock-out hole extending therethrough.

28. The mounting means of claim 21 in which said additional means includes a perforation in said second portion so located as to receive a member located within a mating corresponding perforation located in a base member when said second portion is seated within the tapered base member cavity.

29. The mounting means of claim 21 including hard wear inserts located therein so as to prevent coring.

30. A combination of a mounting means and a base member, said combination being for use in mining, road planing or earth moving equipment in which said combination is itself fixed against rotation about its axis, said mounting means having a shank receiving perforation to receive the shank of a cutting element therein, the improvement which comprises: a tapered portion on said mounting means, said base member having a correspondingly tapered cavity, said base member completely surrounding that part of

- said tapered portion which is seated in said tapered cavity, and said tapered portion being seated within said tapered cavity with a self-releasing wedge fit which is 360° scope whereby to
- 5 impede relative movement between said mounting means and said base member; and retaining means to retain said tapered portion in its seated position within said tapered cavity and to augment said wedge fit.
- 10 31. The combination of claim 30 in which said retaining means comprises a set screw engaging both the said base member and the said mounting means.
- 15 32. The combination of claim 31 in which said set screw is threaded into said base member, said set screw having an enlarged head which is located in a notch provided in said mounting means.
- 20 33. The combination of claim 32 in which there is at least one additional notch in said mounting means capable of receiving said enlarged head.
- 25 34. The combination of claim 31 in which said tapered portion is provided with a notch, said set screw being threaded into said base member and having an end portion engaged within said notch.
- 30 35. The combination of claim 30 in which said retaining means comprises a threaded member engaged within said tapered portion and having one end terminating in a head which engages the base member and an opposite end which serves as an anvil within said shank receiving perforation to be engaged by a cutting element shank.
- 35 36. The combination of claim 35 including a bleed and knock-out hole extending axially through said threaded member.
- 40 37. The combination of claim 30 in which a bleed and knock-out hole is provided axially through said tapered portion into said shank receiving perforation.
38. The combination of claim 30 in which said retaining means comprises mating cavities provided in said tapered portion and in said base member, and a pin engaged within said mating cavities.
- 45 39. The combination of claim 30 in which said mounting means is provided with hard wear inserts to prevent coring.
- 50 40. The combination of claim 31 including means to expel the shank of a cutting element from the shank receiving perforation, said last mentioned means comprising a bore in said tapered portion and a plunger-like element in said bore extending toward said shank receiving perforation and adapted to be moved into said perforation to engage and move said shank.
- 55 41. The combination of claim 40 in which said plunger-like element extends beyond said wedge fitted mounting means and base member a distance sufficient to enable a force to be applied thereto for moving said plunger-like element against said shank to thereby move the same.
- 60 42. The combination of claim 41 including a lever arrangement for applying said force to said plunger-like element.
- 65 43. The combination of claim 40 in which said plunger-like element comprises a piston, and said combination including a fitting for coupling said combination to a source of fluid pressure whereby to actuate said piston to expel a said shank.
- 70 44. The combination of claim 43 in which one end of said piston serves as a rear abutment anvil surface for the shank of a said cutting element.
- 75 45. A knock-out arrangement for ejecting a bit from a bit holder substantially as hereinbefore particularly described and as illustrated in the accompanying drawings.
- 80 46. A mounting means and base member combination substantially as hereinbefore particularly described and as illustrated in the accompanying drawings.